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MACHINE-TOOL LABORATORIES REPORT NEW DESIGNS;
MANY NOW IN PRODUCTION

The Machine Tool Electrification Laboratory of the ENIMS (Experimental Scientific-Research Institute for Metal-Cutting Machine Tools) has designed a new series of two-, three-, and four-speed machine-tool motors, exceptionally small in size and simple to manufacture. They are for use in slot-milling machines, internal grinders, and other machine tools. The laboratory has also designed a 100,000-rpm motor for use in internal grinders and diamond boring machines.

For smoother operation of conventional 40,000-rpm internal grinders and diamond boring machines, the Grinding and Finishing Laboratory of the NIMS has worked out new bearings for the spindles.

For use with main drives up to 3 kilowatts or with feeder drives, the ENDS has developed the Elir electric speed regulator, based on a thyatron electric drive with electronic control. This device provides a smooth, stepless speed adjustment up to ranges of 100:1. The Elir has proved very successful in cylinder and cone-grinding machines, milling machines, lathes and other machine tools.

The Hydraulic Drive Laboratory has come out with a hydraulic reducer of 1:5 range at uniform power and a 1:40 range at any given moment of torque. The efficiency of the reducer is 0.94.

The Automatic Lathe Laboratory has built the Model 1266 horizontal six-spindle hydroelectric automatic lathe. The machine, controlled by a choke coil regulator, excels any foreign make in productive capacity. It can be reset in 3-5 minutes. This rapid reset has been made possible by modern control equipment developed by the electrification laboratory. Such equipment makes high-duty multitool machine tools adaptable to small as well as large series production. Relays for control of lubrication, machining time, and tool pressure have been developed.

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The Hydraulic Drive Laboratory reports a new control system, the MZ11 single hydraulic control panel for use on drilling, boring, and milling machines, and on lathes.

Several duplicating devices for converting universal machine tools into semiautomatic machine tools have been worked out. Of particular interest is a duplex hydraulic profiler. This attachment can be moved about on a hand cart and mounted on any universal lathe or milling machine. It permits duplicate machining of irregular graduated shafts to within tolerances of 0.05 millimeters.

A portable duplicator of this type has made it possible to build new models of basic universal machine tools. An example is the 700-millimeter transverse planing machine developed at ENIMS for series production at the Gomel' Plant named Kirov. Extremely rigid in construction, this hydraulic four-speed tool performs deep chip removal up to speeds of 40 meters per minute.

In the electric and hydraulic variants of the longitudinal planing machines developed by ENIMS for manufacture at the Minsk Plant named Voroshilov, a maximum standardization of basic units has been achieved. The electric tool can operate up to speeds of 75 meters per minute, and the hydraulic, 100 meters per minute.

The Gor'kiy Milling-Machine Plant is now making a bracketless vertical milling machine for high-speed finishing of heavy parts. The tool has a 37-kilowatt main drive; maximum rpm is 1,250, rate of milling, 1,500 meters per minute and faster. Putting the work piece in place and removing it are the only operations which are not completely automatic. This machine is based on a model built earlier at the Stankokonstruktsiya Plant.

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